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=> d his

     (FILE 'HOME' ENTERED AT 13:53:22 ON 20 APR 2006)
     FILE 'CA' ENTERED AT 13:53:29 ON 20 APR 2006
L1 56294 S (PH OR CONDUCT? OR TURBID? OR SCATTER? OR VISCOS?)(6A)(PLOT? OR
         GRAPH? OR DIAGRAM? OR CURVE OR CONTOUR OR DISPLAY? OR REPRESENT?)
L2  6397 S L1(10A)(TEMPERATURE OR DEGREE)
L3  2200 S L2 AND(LIQUID OR SOLUTION OR SOLUTE OR AQUEOUS)
L4   255 S (TURBID? OR SCATTER?)AND L3
L5    91 S (TURBID? OR SCATTER?)AND L3 AND(PH OR CONDUCT? OR VISCOS?)
L6    71 S L4 AND PHASE
L7    21 S L3 AND(3D OR(3 OR THREE OR MULTI OR MULTIPLE)(1W)(D OR
         DIMENSION?))
L8    54 S L3 AND(CLARITY OR CLARIF? OR PHASE(1A)SEPARAT?)
L9   441 S L3 AND TEMPERATURE (2A)(DEPEND? OR EFFECT?)
L10  412 S (PH OR CONDUCT? OR TURBID? OR SCATTER? OR VISCOS?)(6A)(PLOT? OR
         GRAPH? OR DIAGRAM? OR CURVE OR CONTOUR OR DISPLAY? OR REPRESENT?)
         (3A)TEMPERATURE(3A)(DEPEND? OR EFFECT?)
L11  107 S L9 AND L10
L12  283 S L5-8,L11
L13  275 S L12 NOT GRAPHITE
L14  273 S L13 NOT SPUTTER?
L15  269 S L14 NOT FERMI
L16  218 S L15 NOT PY>1998
L17    1 S L15 NOT L16 AND PATENT/DT
L18  179 S L16 NOT(HALL EFFECT OR SOLID SOLUTION OR X RAY OR XRAY)
L19    3 S L16 NOT L18 AND(HEXANE OR AQUEOUS SOLUTION)
L20  172 S L18 NOT(GARNET OR GAS PROPERTIES OR VAPOR PHASE OR FARADAY)
L21  166 S L20 NOT (SPLINE OR ULTRASOUND OR CLAY)

=> d bib,ab l19 1-3

L19  ANSWER 1 OF 3  CA  COPYRIGHT 2006 ACS on STN
AN   107:205055  CA
TI   Temperature-dependent rheological behavior of Pluronic F-127 aqueous
     solutions
AU   Lenaerts, Vincent; Triqueneaux, Caroline; Quarton, Michel; Rieg-Falson,
     Francoise; Couvreur, Patrick
CS   Fac. Pharm., Univ. Montreal, Montreal, QC, H3C 37J, Can.
SO   International Journal of Pharmaceutics (1987), 39(1-2), 121-7
AB   A rheol. study of Pluronic F-127 aq. solns. of 15-30% concns. was
     undertaken at temps. ranging from 15°C to 35°C. An exponential relation
     was found between viscosity and temp., with curve slopes depending upon
     Pluronic concn. A theory is proposed to explain that phenomenon. It is
     based on the previously reported observation that Pluronic micelles in
     water soln. undergo a thermally induced swelling together with
     desolvation. The proposed hypothesis is, therefore, based on the
     creation of a crosslinked network. DSC and x-ray diffraction studies
     show that this network consists of weak interactions (probably hydrogen
     bonds) accounting for the reversibility of the thermoviscosimetric
     behavior, and generates no preferential 3-dimensional arrangement.

=> d bib,ab l21 1-166
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L21 ANSWER 16 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 125:302039 CA
TI Rheology of a Lower Critical **Solution** Temperature Binary Polymer Blend in the Homogeneous, **Phase-Separated**, and Transitional Regimes
AU Kapnistos, M.; Hinrichs, A.; Vlassopoulos, D.; Anastasiadis, S. H.; Stammer, A.; Wolf, B. A.
CS Foundation for Research TechnologyHellas, Institute of Electronic Structure Laser, Heraklion, 71110, Greece
SO Macromolecules (1996), 29(22), 7155-7163
AB Small amplitude oscillatory shear rheol. is employed in order to investigate the linear viscoelastic behavior of the lower crit. **soln.** temp. blend polystyrene/poly(vinyl Me ether), PS/PVME, as a function of temp. and compn. At low temps., where the mixt. is homogeneous, the dependence of the zero shear **viscosity** ($\eta 0$) on concn. was measured and was well-described by means of a new mixing rule, based on surface fractions instead of vol. fractions. Shift factors from time-temp. superposition (TTS) exhibit a Williams-Landel-Ferry (WLF) behavior. As the macrophase sepn. **temp**. is approached (the **phase diagram** being established by **turbidity** measurements), the blend exhibits a thermorheol. complex behavior. A failure of TTS is obsd. at low frequencies, both in the homogeneous pretransitional and in the two-**phase** regimes. Its origin is attributed to the enhanced concn. fluctuations, which exhibit a crit. slowing down near the **phase** boundary in the homogeneous regime, and in the two-**phase** morphol. inside the **phase-sepd**. regime. The anomalous pretransitional behavior can be quantified using a recent mean field theory, yielding the spinodal temp. Furthermore, in the two-**phase** region an intermediate region of enhanced moduli at low frequencies is obsd., followed by flow at even lower frequencies, which is attributed to the two-**phase** structure. The linear viscoelastic properties of the **phase-sepd**. blends are, to a first approxn., adequately described by a simple incompressible emulsion model considering a suspension of droplets of one coexisting **phase** in the matrix of the other **phase**.

L21 ANSWER 17 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 125:249099 CA
TI **Phase separation** of blends of polydisperse polymers. Comparison between experiment and theory for the system poly(dimethylsiloxane)/poly (ethylmethylsiloxane)
AU Enders, Sabine; Stammer, Andreas; Wolf, B. A.
CS Institute Physical Chemistry, Johannes Gutenberg-University, Mainz, D-55099, Germany
SO Macromolecular Chemistry and Physics (1996), 197(9), 2961-2972
AB Cloud point **curves** were measured **turbidimetrically** for blends (upper crit. **soln. temps**.; UCSTs) of poly(ethylmethylsiloxane) (PEMS) and 4 different samples of poly(dimethylsiloxane) (PDMS); the wt. av. molar masses in kg/mol are 31.2 for PEMS and 10.4, 15.5, 18.1, and 24.0 for PDMS. All components have polydispersity indexes D (= Mw/Mn) of 1.82-2.67. Corresponding calcns. on the basis of the Flory-Huggins theory (3 adjustable parameters) account for the polydispersity and mol. wt. distributions are represented by the generalized Schulz-Flory equation. Calcd. cloud point curves agree very well with those measured, if individual sets of parameters are admitted for each of the different

mixts. Even for an identical set of parameters the max. deviations remain moderate. Realistic model calcns. concerning the influences of D on cloud points and on crit. points were performed with this set of parameters. For this only slightly endothermal system, the pptn. threshold increases from 318 to 558.6 K as DPEMS is raised from 1.87 to 4.00, keeping the no.-av. d.p. const.

L21 ANSWER 19 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 125:8928 CA
TI Temperature-composition **phase** diagram and gel properties of the gelatin-starch-water system
AU Khomutov, L. I.; Lashek, N. A.; Ptitchkina, N. M.; Morris, E. R.
CS Chemistry Institute, Saratov State University, Saratov, 410026, Russia
SO Carbohydrate Polymers (1996), Volume Date 1995, 28(4), 341-345
AB The gelatin-starch-water system has been studied at different temps., at a total biopolymer concn. of 5.0 wt%. The wt. ratios (W) of gelatin/starch used were 9:1, 8:2... 2:8, 1:9, with **pH** values between 5.82 (at W = 9.1) and 6.50 (at W = 1:9). The systems were characterized rheol. and by **turbidity** measurements to construct a **phase diagram** in the **temp**. (T) and compn. (W) variables. The T-W quadrant consists of three regions: a single-**phase solns**. region (A) and regions of complete and incomplete **phase sepn**. (B and C, resp.). The system in region C is a gel. Region B, lying between A and C, corresponds to two co-existing **liq. phases**. The transition from A to C (obtained by cooling the system at const. W) involves crossing region B. The properties of the resulting gels depend on the rate of this intersection. Gels formed on rapid cooling have an even distribution of **turbidity**, whereas slow cooling gives two gel layers of different **turbidity**. The gelation temp. and gel strength of the mixed systems are dominated by the gelatin component, with no indication of network formation by starch.

L21 ANSWER 27 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 121:58490 CA
TI Temperature dependence of **viscosities** and potentiometric titration behavior of poly(N-vinylimidazole) in **aqueous** salt **solutions**
AU Sakurai, Masao; Imai, Takateru; Yamashita, Fumitaka; Nakamura, Kunio; Komatsu, Tsuyoshi
CS Fac. Sci., Hokkaido Univ., Sapporo, 060, Japan
SO Polymer Journal (Tokyo, Japan) (1994), 26(6), 658-64
AB Potentiometric titrn. has been studied for **aq. solns**. of poly(N-vinylimidazole) (PVI) in the presence of various supporting electrolytes: NaCl, NaBr, NaNO3, NaI, NaSCN, and NaClO4 at 5, 25, and 45°. At low **degree** of neutralization α', an inflection on the titrn. **curve** and **turbidity** of **soln**. have been obsd. for the systems contg. NaNO3, NaI, NaSCN, or NaClO4 with appropriate concn. The **viscosities** of **aq**. NaBr **solns**. of PVI have been measured at 5, 25, and 45° as a function of α'. The **soln. viscosities** increase with temp. throughout the whole range of α'. The intrinsic **viscosity** α' curves pass through a min. followed by normal increase with an increase in neutralization. The initial contraction of the polymer chain may be attributed to the formation of an intramol. chelatelike bridge between protonated and unprotonated imidazole rings.

L21 ANSWER 29 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 120:78294 CA
TI Fluorescence and viscometry studies of poly(4-hydroxystyrene) in **solution**
AU Himuro, Shozo
CS Dep. Ind. Chem., Ariake Natl. Coll. Technol., Omuta, 836, Japan
SO Polymer Journal (Tokyo, Japan) (1993), 25(12), 1223-8
AB Fluorescence and viscosity of dil. **soln.** of poly(4-hydroxystyrene) (I) were measured in methanol at 5-55°. The fluorescence spectrum of I showed two emission bands at around 308 nm and 356 nm, corresponding to the monomer and the excimer bands, resp. From the **temp.-dependent** fluorescence measurements, a plot of the excimer to monomer intensity ratio Id/Im vs. temp. was obtained, which shows double lines with pos. slopes crossing at ca. 35°. From **temp.-dependent viscosity** measurements, a **plot** of the limiting **viscosity** no. [η] vs. **temp.** was obtained, which shows double lines with neg. slopes crossing at ca. 40°, above which the slope was decreased. There is stronger solvation of solvent mols. to polymer coil at temps. below ca. 35-40°, arising from hydrogen bond formation between I and methanol mols.

L21 ANSWER 35 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 116:46763 CA
TI Theoretical and experimental determinations of the crossover from dilute to semidilute regimes of micellar **solutions**
AU Carale, Teresa R.; Blankschtein, Daniel
CS Cent. Mater. Sci. Eng., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA
SO Journal of Physical Chemistry (1992), 96(1), 459-67
AB A theor. framework for predicting the crossover surfactant concn. (X*) marking the transition from dil. to semidilute to **soln.** regimes of micellar **solns.** is presented. In the dil. regime, the micellar **soln.** consists of identifiable, rodlike micelles which are singly dispersed in the solvent, whereas in the semidilute regime it consists of a transient network of entangled rodlike micelles. The theor. formulationm incorporates the unique salient features of the micellar system, including the self-assembling nature, polydispersity, and flexibility of the rodlike micelles present in **soln.** This general theor. description is then used to examine the possible occurrence of a crossover from dil. to semidilute regimes in **aq. solns.** of the nonionic surfactant n-dodecyl hexaethylene oxide (C12E6). In the C12D6-H2O system, the X* vs. temp. crossover concn. curve intersects the coexistence curve, delineating the boundary between the 1- and 2-phase regions of the phase diagram, in the vicinity of the lower consolute (crit.) point, thus bisecting the phase diagram into dil. and semidilute regimes. It is noteworthy that the X* values predicted by using the full micellar size distribution agree well with those predicted under the assumption of monodisperse micelles having an aggregation no. n, corresponding to ⟨n⟩w, the wt.-av. micelle aggregation no. An attempt is also made to est. exptl. the C12E6 crossover concn. (X*) based on a comparison of the predicted dil.-**soln.** viscosities, calcd. in the context of a generalized M. Doi-S. Edwards (1978) theory applied to flexible, polydisperse rodlike micelles, with measured viscosities as a function of C12E6 concn. and temp. The exptl.

deduced X* values compared favorably with the theor. predicted ones. As in the case of X*, it is noteworthy that predicted viscosities (using the full micellar size distribution) are in close agreement with those predicted under the assumption of monodisperse micelles having an aggregation no., n = ⟨n⟩w. There is also an interesting **temp. dependence** of the **viscosity** vs. C12E6 concn. **curves**. At very low surfactant concns., the viscosity follows the conventional behavior; i.e., it decreases with increasing temp. Beyond a certain surfactant concn., the **temp. dependence** is reversed; i.e., the viscosity increases with increasing temp. An interpretation of this behavior in the context of micellar growth is suggested. A discussion of the implications of the new findings for modeling the phase behavior of **aq.** micellar **solns.** contg. nonionic surfactants of the alkyl polyethylene oxide (CiEj) type is also presented.

L21 ANSWER 45 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 109:238246 CA
TI Titration behavior and **temperature-pH** phase **diagrams** for dilute **aqueous solutions** of alkenesuccinic acids and their potassium and sodium salts
AU Imae, Toyoko; Suzuki, . Sachiko; Abe, Akihito; Ikeda, Shoichi; Fukui, Yosio; Senoh, Masamichi; Tsujii, Kaoru
CS Fac. Sci., Nagoya Univ., Nagoya, 464, Japan
SO Colloids and Surfaces (1988), 33(1-2), 75-83
AB The titrn. **curves** and the **temp.-pH** phase **diagrams** were drawn for dil. **aq. solns.** of alkenesuccinates with C12, C14 and C16 alkene groups. The titrn. curve shifts to higher pH with increasing surfactant concn. or alkene chain length and for K salt rather than Na salt. At lower **temp.**, the phase **diagram** shows the wide pptn. region below **pH** 5.5 and the second pptn. region at higher pH. At higher temp., opalescence is exhibited between pH 3 and 7, and **liq.-liq. phase sepn.** occurs below pH 3. The effects of surfactant concn., alkene chain length, and counterion species on the phase diagram are discussed.

L21 ANSWER 56 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 103:6925 CA
TI Isotope effects on hydrophobic interaction in hydrophobic polyelectrolytes
AU Ohno, Nobumichi; Sugai, Shintaro
CS Dep. Ind. Chem., Akita Natl. Coll. Technol., Akita, 011, Japan
SO Macromolecules (1985), 18(6), 1287-91
AB Optical, pH, viscometric, and 1H NMR titrns. in 0.01-0.27 M **aq.** NaCl at 5-45° indicated a more enhanced hydrophobic stabilization of the compact coil formed in hydrolyzed alternating maleic anhydride-perdeuteriostyrene copolymer (I) than in the undeuterated copolymer (II). The curves for the pH-induced conformational transitions from compact to extended coil forms were calcd. from the pH and optical data in terms of the coil fraction in the mol. vs. degree of ionization of the carboxyl groups. Also, thermodn. parameters of the conformational transition were detd. from the **pH**-titrn. **curves** and their **temp. dependence**, considering dissocn. of the secondary carboxyl groups. The transition curve, transition free energy, and difference of sp. heats between the compact and coil forms in 0.03 M **aq.** NaCl for hydrolyzed I were compared with those previously reported for II.

L21 ANSWER 67 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 94:159397 CA
TI VTP behavior at low pressure
AU Peeken, H.; Spilker, M.
CS Inst. Maschinenelem. Maschinengestaltung, Rheinisch-Westfael. Tech. Hochsch. Aachen, Aachen, Fed. Rep. Ger.
SO Schmiertechnik Tribologie (1980), 27(6), 203-6
LA German
AB **Three-dimensional diagrams** are given for **viscosity-temp.**-pressure (VTP) relations for motor oils, gear oils, and hydraulic fluids (phosphate esters, **aq.** glycols) at 0-108 N/m2.

L21 ANSWER 69 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 93:240139 CA
TI Studies on the **phase** behavior of monomer-polymer systems under high pressure
AU Raetzsch, Manfred; Findeisen, R.; Sernow, V. S.
CS VEB Leuna Werke "Walter Ulbricht", Leuna, DDR-4220/3, Ger. Dem. Rep.
SO Zeitschrift fuer Physikalische Chemie (Leipzig) (1980), 261(5), 995-1000
LA German
AB A **phase** equil. app. was developed for visual observation of the demixing process in monomer-polymer systems at 20-300° and pressure ≤400 MPa. The **phase sepn.** behavior of ethylene [74-85-1]-polyethylene [9002-88-4] and ethylene-vinyl acetate copolymer [24937-78-8] systems was detd. in the tech. interesting range used in synthesis. The **turbidity curves** for the former system at 160° showed an increase in demixing pressure with mol. wt. The demixing pressure for the copolymer system was generally lower because of the **soln.**-promoting effect of the vinyl acetate [108-05-4]. The use of **turbidity** curves in optimizing polymn. conditions was discussed.

L21 ANSWER 73 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 92:147332 CA
TI Demixing of unsheared and sheared **solutions** of polystyrene in tert-butyl acetate and the pressure influence on their flow behavior
AU Schmidt, J. R.; Wolf, B. A.
CS Inst. Phys. Chem., Univ. Mainz, Mainz, D-6500, Fed. Rep. Ger.
SO Colloid and Polymer Science (1979), 257(11), 1188-95
AB The **phase sepn.** behavior of polystyrene (I) [9003-53-6] **solns.** in tert-Bu acetate is examd. by visual and **turbidimetric** cloud point measurements and viscometry. The 2.18-9.59% **solns.** of I, mol. wt. 670,000, were examd. The cloud points of I **solns.** detd. visually were higher at near-crit. concn. and lower at low concns. compared to binodal temp. detd. **turbidimetrically.** The reciprocal **turbidity**-binodal **temp. dependence curve** had a min. corresponding to the crit. concn. of I. The viscometric detn. of demixing points confirmed a stabilization of I **solns.** at medium concns. The **viscosity** (η) of homogeneous I **solns.** increased exponentially by a factor of 3-4 per 1000 bar, at pressure 1-1000 bar, temp. -20 to 25°, concn. 4-10% and shear rates 25-640 s-1. The log η vs. concn. curve of I **solns.** showed a hump and a flow activation vol. vs. concn. curve had a min. on approaching the crit.

conditions.

L21 ANSWER 90 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 81:68855 CA
TI Graphical method for the determination of **temperature-dependent** characteristics of homogeneous fluids at constant pressure
AU Wasmund, R.
CS Tech. Univ. Berlin, Berlin, Fed. Rep. Ger.
SO Monatsschrift fuer Brauerei (1974), 27(6), 117-20
LA German
AB A method is presented for the graphical detn. of material characteristics of homogeneous **solns**. varying as functions of temp. at const. pressure. The method is demonstrated in detg. d., dynamic viscosity, and kinematic viscosity data of the 1-phase system EtOH-sucrose-H2O.

L21 ANSWER 94 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 80:15352 CA
TI Viscometric properties of concentrated polymer **solutions**. III. Dependence of viscosity on temperature and determination of the parameters of Vogel's equation
AU Pondecka, J.; Quadrat, O.
CS Ustav Makromol. Chem., Prague, Czech.
SO Collection of Czechoslovak Chemical Communications (1973), 38(1), 208-14
AB A computer **soln**. of the linearized Vogel equation by a least squares method gave a more accurate detn. of the parameters expressing the **temp. dependence** of the **viscosity** of concd. polymer **solns**. than the **graphical** method, which emphasized exptl. errors. The values calcd. were used to det. the concn. dependence and activation energy of the flow of polystyrene [9003-53-6] in cyclohexanone [108-94-1] and poly(vinyl acetate) [9003-20-7] in diethyl phthalate [84-66-2].

αβσL21 ANSWER 95 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 78:120539 CA
TI Plotting phase diagrams for procollagen **solutions**
AU Andronikashvili, E. L.; Monaselidze, D. R.; Bakradze, N. G.; Mrevlishvili, G. M.
CS Inst. Physiol., Tbilisi, USSR
SO Molekulyarnaya Biologiya (Moscow) (1972), 6(6), 915-25
LA Russian
AB A microcalorimetric method was used for obtaining equil. curves of helix-coil transition for dild. **solns**. of acid-soluble procollagen from rat skin in the alk. and acid pH regions. The specific melting heat for native type fibrils was detd. in the pH range from 4.2 to 10.5 and was equal to 18 cal/g of the protein. The process of formation of native type fibrils was not accompanied by any considerable thermal effect. When equil. conditions of transitions were reached the heat and temp. of melting of fibrils coincided with the enthalpy and temp. of progolaggen melting in dild. **solns**. Intermolecular interactions gave a small energy contribution to the process of formation of native type fibrils. An increase of the protein concn. in native type fibrils as a result of a decrease of the vol. fraction of the solvent led to an increase of the thermal stability of fibrils. These studies make possibile the plotting

of a 2-dimensional phase **diagram** on **pH-temp**. coordinates which describe the properties of procollagen macromols. in all 3 forms (helical, coil, and native type fibrils). A **3-dimensional** phase diagram was plotted on the coordinates concn.- temp.-percentage of ruptured bonds, both for the native and heat- denatured protein.

L21 ANSWER 96 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 76:100280 CA
TI Intramolecular phase transitions of block copolymers in **solution** from viscosity-temperature studies
AU Urwin, J. R.; Girolamo, M.
CS Dep. Phys. Inorg. Chem., Univ. Adelaide, Adelaide, Australia
SO Makromolekulare Chemie (1971), 150, 179-88
AB Intrinsic **viscosity** vs. **temp. plots** for 2-sequence isoprene-styrene block copolymers [25038-32-8] in Decalin [91-17-8] and methylcyclohexane [108-87-2] confirmed the general behavior of the polymers in preferential solvents, i.e. solvents that are good solvents for 1 block copolymer sequence but poor solvents for the other sequence. The operative parameters were the mol. wt., compn., and Θ temp. of the less-sol. polymer in the particular solvent. The Stockmayer-Fixman relation was obeyed for a particular compn. at all temps., but the unperturbed dimensions in the block dropped at temps. below the transition temp., reflecting the conformation change from the phase-mixed to **phase-sepd.** form.

L21 ANSWER 97 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 76:90888 CA
TI Physicochemical properties of **aqueous solutions** of sodium and potassium pyrophosphates
AU Galinker, V. S.; Bykova, M. I.
CS Kiev. Politekh. Inst., Kiev, USSR
SO Zhurnal Prikladnoi Khimii (Sankt-Peterburg, Russian Federation) (1971), 44(12), 2741-4
LA Russian
AB The viscosity and elec. cond. of **aq. solns.** of Na4P2O7.10H2O and K4P2O7.3H2O were investigated at 20-70°. The **temp. dependence** of the elec. cond. is expressed by straight lines; and that of the viscosity by bent curves. The elec. cond. of the **solns.** may be calcd. by means of an interpolation formula. The **temp. dependences** of the **viscosity**, as **represented graphically**, are rectilinear. The calcd. activation energies of viscous flow and elec. cond. for **solns.** of various concns. are 3-3.8 kcal/mole. The product of elec. cond. and viscosity remains const. with varying temp. for all the systems studied.

L21 ANSWER 101 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 75:101568 CA
TI Viscosity of the cyclohexane-aniline binary **liquid** system near the critical temperature
AU Meeks, F. R.; Yang, Charles C.
CS Dep. Chem., Univ. Cincinnati, Cincinnati, OH, USA
SO Journal of Physical Chemistry (1971), 75(17), 2619-23
AB The viscosity of the binary **liq.** system cyclohexane-PhNH2 was measured in the region just above the coexistence curve for 3 compns.: 0.430,

0.445, and 0.460 mole fraction PhNH2. The temp. control was better than ±0.001°; the data produced a typical branch of a λ-shaped **curve**, and typically, the **viscosity** is anomalously high as the **phase sepn. temp.** is approached. Neither logarithmic nor exponential behavior of the viscosity is followed for the full range of temps. investigated (0.001-0.3° above **phase sepns.**).

L21 ANSWER 112 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 70:50735 CA
TI Development of a novel method for evaluation of the viscosity-**temperature dependency** of **liquids** using the Umstaetter equation
AU Riemschneider, Randolph; Hoyer, Georg Alexander
CS Freie Univ. Berlin, Berlin, Fed. Rep. Ger.
SO Erdoel & Kohle, Erdgas, Petrochemie (1968), 21(9), 540-3
LA German
AB A prerequisite for the investigation of the effect of chem. structure on the viscosity and the viscosity-**temp. dependency** is the existence of a suitable quant. evaluation method. Such an evaluation method must completely and truely represent the effect of the structure on the viscosity and viscosity-**temp. dependency**. The **viscosity-temp. curves** are characterized by 3 criteria: the height of the curve, the curve shape, and the rotation of the **curve** about any **curve** point in the **viscosity-temp. diagram**. For a complete evaluation, at least 3 characteristic values must be available. The use of a smaller no. of characteristic values leads only to partial results and restricts the evaluation. Each of the 3 characteristic values must be ideal and must completely and truely represent the above criteria. The evaluation methods described in the literature do not comply with the above requirements. A new method was developed which largely answers the required conditions. The coordinate values of the point of max. curvature are specified as characteristic values for the height of the **curve** in the **viscosity-temp. diagram**. The value of the max. curvature is taken as a measure for the **curve** shape and thus for the **viscosity-temp. dependence**. The rotation is characterized by the value of the slope at the point of max. curvature. The calcns. are made with the universally valid Umstaetter equation. The disadvantages of this evaluation method are the complicated and tedious calcn., and the use of an empirical formula. But since the hydrocarbons and other classes of compds., e.g., ethers, esters, comply with the Umstaetter formula, this disadvantage is not as significant. An advantage is that curves of substances with similar curve shape, but with different heights, have similar values. But, a change of the curve shape leads to different values of the max. curvature. As an example, the new method is applied to the case of tetradecane.

L21 ANSWER 113 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 69:61771 CA
TI Relation between the electrical conductivity and degree of dispersion of lyophyllic colloids. IX. Sodium stearate, oleate, and elaidate (0.2M) in the presence of aliphatic alcohols with a linear chain
AU Angelescu, Eugen; Radu, Minodora
CS Inst. Org. Chem., Bucharest, Rom.
SO Revue Roumaine de Chimie (1967), 12(11), 1359-65

AB The change in the dispersion degree of Na stearate and of its stereoisomer soaps, Na oleate (cis) and Na elaidate, with elec. cond., λ, was investigated at a concn. of 0.2M Na stearate in H2O in the presence of EtOH, PrOH, BuOH, amyl alc., and n-hexyl alc., added in various concns. c until a heterogeneous system was obtained. Measurements were at 40, 50, and 60° (±0.05°). All the values obtained remained const. with time. Addn. of EtOH, PrOH, and BuOH to the system lowered the gelation temp. of the Na soaps. The **solns.** were **clarified** with increase in the alc. concn.; the amyl and the hexyl alcs. gave high viscosities, almost leading to hardening of the system. The plot of λ vs. c (of the alc.) showed that the same type of curve was obtained, irresp. of the temp. and nature of the soap. The λ increases with the first addn. of alc. and reaches a max., which moves, except for EtOH, towards higher c, as the chain length gets shorter. For low c in the range of max. λ, the λ is higher, the longer the alc. chain, and for high c, the λ are higher, the shorter the alc. chain. **Plots** of the **viscosity** η vs. c did not show characteristic differences with the **temp.** and the nature of the soap. The η of each **soln.** increased more with addn. of longer-chained alcs. The η of soaps with EtOH and PrOH were very close for each c, but the **soln.** η in the presence of BuOH and amyl alc. differed greatly, and with addn. of amyl alc., an η jump was observed. In **solns.** of the pure soaps, λ decreased in the order oleate > elaidate > stearate. This is attributed to a decrease in the degree of dispersion. The similarity of the curves in the presence of an alc. indicated that unsatn. or geometrical isomerization of the soap mols. did not impart qual. differences to the action exerted by the alc. on the resp. colloidal systems. The initial increase of λ with addn. of alc. is attributed to an increase in the degree of dispersion as a result of alc. solubilization by the soap micelles. Simultaneously, the alc. mols. decreased the van der Waals forces, dividing the micelles, thus increasing the no. of conductive particles in the system.

L21 ANSWER 119 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 65:38883 CA
OREF 65:7290a-c
TI Rapid **turbidimetric** determinations of θ conditions [of polymer-solvent systems]
AU Cornet, C. F.; van Ballegooijen, H.
CS Koninklijke-Shell Lab., Amsterdam
SO Polymer (1966), 7(6), 293-301
AB A rapid method is presented for detn. of θ temps. of polymer-single solvent systems. A nonsolvent was added to a stirred dil. polymer **soln.** until **phase sepn.** started. The concn. of the polymer **soln.** was 0.001-1 wt. %. The vol. fraction of nonsolvent necessary for pptn. was plotted vs. the log of the corresponding vol. fraction of polymer. The dependence was linear, and extrapolation to pure polymer gave the θ compn. The rate of addn. must be 1 ml./min. for a 100-ml. cup. A stirred dil. polymer **soln.** was slowly cooled until **phase sepn.** started. The abs. **temps.** of **turbidity** were **plotted** vs. log. of the corresponding vol. fraction of polymer. A linear dependence was obtained, and an

extrapolation to pure polymer gave the reciprocal θ temp. The **soln.** under study was placed in a 100 ml. cylindrical glass receiver, the **soln.** was illuminated by a lamp, and the variations of the light flux through the **soln.** was recorded by photoelec. cell. θ-Temps. were detd. for poly(α-methylstyrene)cyclohexane, polystyrene-cyclohexane, and polyisoprene-iso-BuCOMe. Three samples of the 1st system had θ-temps. of 35.7, 36.1, and 36.8°. The real θ temp. is 36.2° ± 1°. The θ temp. of the 2nd system was 33.7°. The θ temp. of the 3rd system was 13°. The θ-compns. of poly(α-methylstyrene)-cyclohexane-heptane at 34° and of polyisoprene-iso-BuCOMe-iso-BuOH systems were detd. A theoretical discussion of the detn. of θ-temp. is given.

L21 ANSWER 121 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 65:25509 CA
OREF 65:4728c-e
TI Coagulation of synthetic latexes. III. **Phase separation** of **aqueous solutions** of nonionic emulsifiers
AU Beresnev, V. N.; Fermor, N. A.; Smirnov, N. I.
SO Zhurnal Prikladnoi Khimii (Sankt-Peterburg, Russian Federation) (1966), 39(5), 1117-24
LA Russian
AB cf. CA 64, 12974g. **Phase sepn.**, viscosity, and structural changes were studied as functions of temp. (15-95°) and concn. of **aq. solns.** (1-35%) of the OP-14 emulsifier. The **temp.** vs. relative **viscosity curve**, ηrel = f(T), has a min. and a max. peak (ηmin. and ηmax.). The latter corresponds to the **phase-sepn.** point. The presence of min. and max. on the curves is attributed to the hydration-dehydration processes occurring in the system during heating. The decrease in ηrel. with temp. to a min. may be attributed to the destruction of structural bonds in the **soln.** and the formation of larger size and wt. micelles. The increase in ηrel. to ηmax. with temp. is attributed to the change in the degree of hydration and consequently the change in the size and shape of the micelles. A sharp change in the structure of the system occurs after the hydration of the hydrocarbon chain of the emulsifier is completed. This stage is characterized by limiting size of the spherical micelles. At a const. temp., the degree of hydration of the hydrocarbon chain depends on the concn. of the emulsifier. The crit. points on the temp.-concn. curves of **phase sepn.** also indicate structural changes in the system. The addn. of electrolytes (NaCl and Na2SO4) has no marked effect on properties of the emulsifier.

L21 ANSWER 131 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 59:35964 CA
OREF 59:6528a-b
TI The temperature dependence of dilute **solution** properties of polystyrene
AU Krigbaum, W. R.; Mark, F.; Pritchard, J. G.; Hunter, W. L.; Ciferri, A.
CS Duke Univ., Durham, NC
SO Makromolekulare Chemie (1963), 65, 101-5
AB **Solns.** of polystyrene in Decalin were examd. by light **scattering** at 60-85° and by viscometry at 30-110°, to investigate the anomolous transition reported by Reiss and Benoit (CA 56,579e). The present

results indicate that the radius of gyration has a small max. at 75° and the intrinsic **viscosity** deviates slightly from a smooth, theoretical **curve** at 50-90°, but in neither case beyond the exptl. error, providing no clear evidence for any anomoly in the temp. dependence of the av. mol. dimensions, which suggests that the transition may involve a change in the local arrangement of short sections of the mol. chain.

L21 ANSWER 134 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 59:9381 CA
OREF 59:1768e-h
TI Corresponding state relations for the viscosity of moderately concentrated polymer **solutions**
AU Utracki, L.; Simha, Robert
CS Univ. of Southern California, Los Angeles
SO Journal of Polymer Science, Part A: General Papers (1963), 1, 1089-98
AB Mol.-wt.-independent relations of viscosity are considered as a function of concn. for **solns**. in both good and θ-solvents of polystyrene, poly(Me methacrylate), and a copolymer of 49 mole % of Me methacrylate with styrene. The viscosity variable used was the ratio $\eta s/(c[\eta])$, where ηs is the sp. viscosity, $[\eta]$ is the intrinsic viscosity, and c the concn. The reduced concn. was expressed in terms of c0, the c at which the av. polymer coils start to overlap. The choice of these variables gave relations for a given polymer nearly independent of mol. wt. in good solvents. In poor solvents, the departures were more pronounced. **Viscosity**-c **curves** for different **degrees** of polymerization were superimposable, both in good and poor solvents. Plots were made on a double log scale of $\eta s/(c[\eta])$ vs. c and attempts made to superpose the curves for different fractions. This was done by ascribing to each mol. wt. species a shift factor γ(.hivin.MN) with respect to c(.hivin.MN = no.-av. mol. wt.). The parameter γ varied less rapidly with degree of polymerization than did c0, especially in the good solvent, toluene, where γ was independent of temp. In the poor solvent, cyclohexane, γ was proportional to the critical concn. for **phase sepn**. The parameter k1, which is defined by $a/(\gamma[\eta])$, where a is independent of mol. wt., was predicted to be a slowly decreasing function of mol. wt. in a good solvent, but was almost independent of mol. wt. in cyclohexane. This agrees with recent observations for polystyrene fractions with mol. wts. <50,000. The results are sensitive to polydispersity, and depend on higher moments of the distribution.

L21 ANSWER 135 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 58:82104 CA
OREF 58:14122h,14123a
TI Dilute **solution** viscosities of polymers near the critical temperature; corresponding state relations
AU Utracki, L.; Simha, Robert
CS Univ. of Southern California, Los Angeles
SO Journal of Physical Chemistry (1963), 67, 1052-5
AB The viscosities of 10 polystyrene fractions covering a mol.-wt. range from ~7 x 103 to 7 x 105 were measured in cyclohexane over a range of temps. from above T = θ to about T= Tc, the crit. **soln**. temp. The observed mol. wt. dependence is discussed of 2 quantities, the intrinsic

viscosity at Tc and k1 at and below T= θ. The results for the former show Tc to **represent** a corresponding **temp**. for the intrinsic **viscosity** and moreover at T= Tc, [η] is inversely proportional to v2c, the crit. vol. fraction for **phase sepn**. By means of the [η] values the av. segment d. is estd. within the encompassed coil vol. at T = T, and find it to be equal to v2c over the appropriate range of mol. wts. The results for k1 lend further support to the corresponding states principle for **soln**. viscosities previously developed. Cf. following abstr.

L21 ANSWER 147 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 51:49776 CA
OREF 51:9204g-i,9205a-b
TI Temperature-dependence of light **scattering** and intrinsic **viscosity** of hydrogen bonding polymers
AU Silberberg, A.; Eliassaf, J.; Katchalsky, A.
CS Weizmann Inst. Sci., Rehovot, Israel
SO J. Polymer Sci. (1957), 23, 259-82, discussion 282-4
AB A group of chemically related polymers [poly(methacrylic acid), poly (methacrylamide), poly(acrylic acid), and poly(acrylamide)] having a large no. of groups capable of forming H bonds along the chain, was investigated by studying the temp. dependence of the 90° **scattering** of light and of the **viscosity** of dil. **aq. solns**., mineral acid being added in the case of the polyacids in order to suppress ionization. The intercepts of the light-**scattering plot** indicated no dependence of mol. wt. on **temp**., but the slope B of this **plot** and the intrinsic **viscosity** [η] were found to change markedly with **temp**. The slope parameter B and the intrinsic **viscosity** decreased with increase in temp. in the case of poly(methacrylic acid), but increased with increase in temp. in the other 3 cases. The exceptional behavior of poly(methacrylic acid) is correlated with its known tendency to form gels on heating in concd. **aq. soln**. A discussion of the light-**scattering plot** slope parameter B and its **temp**.-dependence is given, based on fluctuation theory and the exptl. evidence. It is emphasized that B is a measure of the interactions between the kinetic units as they exist in the **soln**. and that its temp.-dependence gives information about the entropy and energy changes accompanying changes in concn. These quantities are calcd. and briefly discussed. The correlation between B and the intrinsic **viscosity** [η] is examd. in the light of the Flory-Fox-Krigbaum treatment. Relations involving, resp., the heat and entropy of diln. are derived and used for comparison. The results are found to conform well with these theoretical predictions. Calcns. of the length of the statistical chain element show that these values in the case of poly (methacrylic acid) and amide are about half the value for poly(acrylic acid) under corresponding conditions. This is at variance with the fact that the presence of the methyl group should have a marked stiffening effect on the chain. The discrepancy is attributed to intramol. H bonding, the poly(methacrylic acid) chain being assumed to be the more strongly bonded. The possibility of intramol. bonding makes the agreement with Flory's treatment of coil expansion particularly interesting. A possible explanation is suggested.

L21 ANSWER 154 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 39:20241 CA
OREF 39:3181h-i,3182b
TI **Viscosity-temperature curves**. A consideration of selected examples
AU Steiner, L. A.
SO Chemical Age (London) (1945), 52, 361-3
AB cf. C.A. 38, 3515.7. Viscosity detns. have many analytic advantages but **viscosity-temp. curves** are more useful when examg. impure **liquids** and industrial products like polymers or oils. Three types of **viscosity-temp. curves** are listed and examples given. (1) Curves with no hysteresis are given by simple pure **liquids** and many complex ones if the temp. range is not too great, (2) **liquids** which undergo a permanent change in viscosity on heating due to decompn., polymerization, etc., and (3) emulsions, suspensions, and many colloids show hysteresis.

L21 ANSWER 156 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 34:30440 CA
OREF 34:4640a-b
TI Solid-**liquid** transition of colloidal stearic acid
AU Subbaramaiah, K.; Iyer, M. P. V.; Doss, K. S. G.
SO Current Science (1939), 8, 360
AB Sols of solid stearic acid in H2O show a marked "Schlierung" effect which disappears at the m. p. of the acid, owing to transition from rod-shaped to spherical particles. The transition is reversible, and is accompanied by an inflection in the **cond.-temp. curve** and sharp changes in intensity and depolarization of the light **scattered** from the particles of the sol.

L21 ANSWER 160 OF 166 CA COPYRIGHT 2006 ACS on STN
AN 32:49527 CA
OREF 32:6898a-b
TI The electrical conductivity as a measure of the oversaturation of sugar liquors. VI. The extent of the dependability of the Honig principle
AU Panzer, Dominik
SO Listy Cukrovar. 1938, 56, 361-401 (361-368 and 395-401)
LA Unavailable
AB In a **3-dimensional** phase **diagram** P. **plotted** the **cond.** against **temps.** and quotients for a const. satn. In most of the regions the cond. values formed a flat surface, which rose abruptly for quotients greater than 99. Such abrupt changes at the borders of the diagram were ascribed to secondary influences encountered in the measurements, but within wide limits the Honig principle was verified by lab. detns.

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